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ABSTRACT

3D COMPUTER GRAPHICS PROCESSING APPARATUS

AND METHOD

In a computer graphics apparatus, a three-dimensional
object is modelled using a mesh of triangles which
approximate the object surface. To display images, each
triangle is sub-divided into smaller triangles, which do
not necessarily lie in the same plane as the original
triangle. In this way, the curvature of the object
surface can be more accurately modelled. A parametric
patch, such as a Bernstein-Bezier triangular patch or
Heron patch, is used to determine how to divide each
triangle into smaller non-planar triangles. In addition,
the number of non-planar triangles is determined using
the size of the original triangle in the current or a
preceding frame of image data. The non-planar triangles
are stored for use in subsequent frames which require the
same number of non-planar triangles, thereby reducing
processing requirements. Rather than carry out lighting
calculations for the vertex of each new non-planar
triangle, lighting values are calculated and used to
define a parametric patch which is subsequently used to
determine lighting values for the new triangles.

(FIGURE 2)